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ABSTRACT

This paper presents a summary description of the Tennessee Technological University Teacher Evaluation Model and of its application to teachers in early childhood education. The model was developed to assess the graduates of teacher education programs at Tennessee Technological University. The evaluation is based on information from four sources: graduates of the teacher education program, their supervisors (principals), their students, and independent observers. Types of data collected include self-ratings of teacher ability, ratings of the level of achievement of objectives of the teacher education program, demographic information, grade averages, courses completed, standardized test scores, measures of personality, ratings of teacher competence by principals and by students, and direct classroom observation. Results are presented for the application of the model to 115 graduates who were teaching in grades K-3 (of these, 85 graduates had completed the B.S. and 30 had completed the M.A. degree). Older individuals with more teaching experience and formal education were more open-minded in their beliefs, were rated higher by their principals and by their students, and were rated higher by independent observers of classroom behavior. (SS)

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TEACHER EVALUATION IN EARLY CHILDHOOD EDUCATION:

APPLICATION OF A MODEL

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The problem of the evaluation of graduates of teacher education programs has been a concern of institutions of higher education for a number of years. The need for institutions of higher education to evaluate their teacher education programs was given emphasis in the standards adopted in 1970 and 1977 by the National Council for the Accreditation of Teacher Education (Standards, 1970 & 1977). Standard 6.1 states "The institution . . . engages in systematic efforts to evaluate the quality of its graduates upon completion of their program of study and after they enter the teaching profession. This evaluation includes evidence of their performance in relation to program objectives" (p. 11). Standard 6.2 gives emphasis to use of evaluation results in program improvement and states "The institution regularly evaluates its teacher education programs and used the results of its evaluation in the modification and improvement of those programs." (p. 11).

In order to meet the above standards and gather sufficient information for curriculum development and improvement, Tennessee Technological University initiated a program of systematic followup studies in 1970 of the graduates of the teacher education program. Due emphasis was given to the graduates of the programs for the preparation of teachers entering the area of early childhood education. These early studies led to the development and implementation, in 1973, of the Tennessee Technological University Teacher Evaluation Model. The major objectives of the evaluation program of the University include the following:

1. To evaluate the objectives of the teacher education program of the University through a systematic study of the graduates.
2. To provide information for faculty and administration concerned with teacher education programs at the University in making decisions pertinent to curriculum evaluation and development.

3. To aid in the process of making long-range plans for improving the total program of the University with particular emphasis on teacher education.

Tennessee Technological University Teacher Evaluation Model

Based in part on the work of Sandefur (1970), Tennessee Technological University developed and implemented a longitudinal model for evaluating the product (graduates) of its teacher education programs. The major purposes of the study resulting from implementation of the model were to evaluate graduates of the teacher education program and to apply the results to the process of making long-range plans for improving the total program of the University with particular emphasis on teacher education (Ayers, 1975, 1976a,b, 1977, 1978).

The basic evaluation model provides input from four sources including (1) graduates of the teacher education program, (2) their supervisors (principals), (3) their students, and (4) independent observers. Following is a brief description of the instruments and methods used for collecting data from the four basic sources.

Graduates

Career base-line data including such variables as demographic information, ratings of the level of achievement of objectives of the teacher education program of the University, and self-ratings of teaching ability are collected from a sample of graduates by use of questionnaires. Grade averages, courses completed, and standardized test scores from such instruments as the National Teacher Examinations, are obtained from University permanent records and a measure of the graduates' personality is obtained by administration of the California F-Scale Forms 45 and 40 (Adorno, 1964).

Supervisors

Principals' evaluations are obtained using the Teacher Evaluation by Supervisor Instrument (Sandefur, 1970). This instrument allows for the rating of the graduates in four areas: (1) subject matter competence, (2) relations with students, (3) appropriateness of assignments and academic expectations, and (4) overall classroom effectiveness. A second instrument, also completed by the principals, is designed to obtain a rating of the level of achievement by the graduates of the objectives of the teacher education program.

Pupils

There is considerable evidence that pupil evaluations of the teacher is a valid source of information. The Student Evaluation of Teaching (SET-I) developed by Veldman and Peck (Veldman, 1970) is utilized to obtain five dimensions of teacher behavior in grades 4-12. These dimensions include: (1) Friendly and Cheerful, (2) Knowledgeable and Poised, (3) Lively and Interesting, (4) Firm Control, and (5) Democratic Procedure. A second version of the instrument (SET-II) has been developed by Haak, Kleiber and Peck (1972) for use in grades K-3. This instrument is used to assess five dimensions of teacher behavior as follows: (1) Rapport, (2) Interactional Competence, (3) Interaction Style, (4) Unreasonable Negativity, and (5) Fosterance of Self-Esteem.

Independent Observers

Three direct classroom observation systems are employed in the model including: (1) a ten-category system of interaction analysis (Amidon & Flanders, 1971), (2) the Classroom Observation Record (COR) developed by Ryans (1960), and (3) the Tuckman Teacher Feedback Form (Tuckman, 1976).

The ten-category interaction analysis system is used by trained research assistants to assess in a quantifiable manner the behavior of teachers and students engaged in the teaching-learning process. The COR measures four dimensions of student behavior and 18 dimensions of teacher behavior. Each dimension of pupil and teacher behavior was carefully described and defined in a glossary accompanying the recording form. A polarized seven-point interval is used by the research assistants to rate each pupil and teacher behavior dimension. The Tuckman Teacher Feedback Form measures four dimensions of teacher characteristics including (1) Creativity, (2) Dynamism, (3) Organized Demeanor, and (4) Warmth and Acceptance.

Data Collection

Collection of data with the above instrumentation is being accomplished in two ways. First, extensive use has been made of the mail for collecting initial data from graduates of the teacher education programs. Also, this has allowed for making contact with graduates after they have entered the teaching profession. Initially, all graduates are contacted in the fall of the year after graduation for the collection of initial demographic information. In turn, those graduates that are teaching within a 100-mile radius of the University are asked to participate in the longitudinal study. For the past seven years, about 55-60 graduates (each year) who had completed either the Bachelor of Science (B.S.) or Master of Arts (M.A.) degrees have volunteered to participate in the project.

These graduates are visited by specially trained graduate assistants for purposes of collecting additional data. The assistants spend approximately a half day in each participant's classroom completing the observation

instruments, interviewing the graduates and principals, and collecting data for computer processing.

Application of the Model to Graduates in Early Childhood Education

During the course of the operation of the model, various subgroups of graduates have participated in the project, i.e., science teachers, physical education teachers, and elementary education teachers. The purpose of this section was to present the results of the application of the model to those graduates who were teaching in grades K-3. From 1973 through 1978, 115 individuals (85 who had completed the B.S. and 30 who had completed the M.A.) had participated in the project for one or more years who were teachers in grades K-3. Data presented were collected during the first year after the individuals had completed their respective degrees.

Seventy-seven B.S. graduates had completed the National Teacher Examinations. The mean score on the Weighted Commons Examination for this group was 1163 (SD=134) which placed them at about the 48th percentile when compared with national samples. The 13 M.A. graduates had achieved a slightly higher mean score on the Weighted Commons Examination ($\bar{X}$=1186, SD=151). Mean teaching area examination scores for both groups were approximately 604 (SD=72), which placed them at the 52nd percentile when compared to national norms. Scores on the American College Test completed by the graduates prior to admission to the University indicated that both groups were near the national average for entering freshmen with a mean score of 19 (SD=5.0).

During the first year of participation in the project, all graduates complete the California F-Scale. The mean score for the 75 B.S. graduates

completing the test was 105 (SD=21) while the 21 M.A. subjects achieved a mean score of 94 (SD=22). There was no significant difference between the groups. It appeared that older subjects with more teaching experience and formal education were more open-minded in their beliefs.

Both B.S. and M.A. graduates were rated highly by their principals. Table 1 shows the mean ratings given by the principals. It will be noted that in all cases, M.A. graduates were rated higher than B.S. graduates.

TABLE 1

MEAN PRINCIPAL RATINGS OF FOUR DIMENSIONS OF TEACHING

Dimension	B.S. (N=77)		M.A. (N=21)	
	$\bar{X}$	SD	$\bar{X}$	SD
Subject Matter Competence	4.1	0.8	4.6	0.6
Relations with Students	4.2	0.9	4.5	0.7
Appropriateness of Assignments	4.2	0.8	4.5	0.5
Overall Effectiveness	4.0	1.0	4.5	0.6

The SET-II was administered in the classroom of all subjects. Mean scores on the five dimensions of the instrument are shown in Table 2. Again, it will be noted that M.A. graduates scored higher than B.S. graduates. Based on comparisons of the data with national norms developed by the Research and Development Center at the University of Texas, the graduates in the study appeared to be scoring somewhat low in the area of interactional competence.

A ten category interaction analysis system was utilized to record observed classroom behavior. This system was basically described by

TABLE 2

COMPARISON OF MEAN SCORES FROM THE STUDENT EVALUATION OF TEACHING

Factor	B.S. (N=58)		M.A. (N=19)	
	$\bar{X}$	SD	$\bar{X}$	SD
Rapport	5.5	1.3	5.6	1.0
Interactional Competence	4.6	0.8	4.9	0.8
Stimulating, Interaction Style	10.1	2.2	10.7	1.7
Unreasonable Negativity	8.1	1.6	8.2	0.8
Fosterance of Self-Esteem	6.7	1.1	7.3	1.0

Amidon and Flanders (1971) and consisted of four categories of indirect teacher talk, three categories of direct teacher talk, two categories of student talk and one non-verbal category. Following are the ten categories: (1) Accepts Feelings, (2) Praises or Encourages, (3) Accepts or Uses Ideas of Students, (4) Asks Questions, (5) Lecturing, (6) Giving Directions, (7) Criticizing or Justifying Authority, (8) Student Talk-Response, (9) Student Talk-Initiation, and (10) Silence or Confusion. The observers recorded a numerical value corresponding to a particular category every three seconds or every time the categories changed. Thus, an objective record was obtained of the variable interaction within the classroom. Three to six twenty-minute observations per subject were recorded during each half-day visit. Ratios (see Table 3) were computed to reflect the climate of the classroom.

i/d — Indirect to Direct Ratio = Sum of categories 1, 2, 3 divided by Sum of Categories 6, 7

I/D — Indirect to Direct Ratio = Sum of categories 1,2,3,4 divided by sum of categories 5,6,7

ST/TT	Student Talk to Teacher Talk = Sum of categories 8,9 divided by sum of categories 1-7
Sil/Tot	Silence to Total Teaching = Category 10 divided by Sum of categories 1-7
Lec/Tot	Lecture to Total Teaching = Category 5 divided by sum of categories 1-7

The ratios presented in Table 3 are comparable with those from other studies. Again, M.A. graduates appeared to be teaching at a more refined level than B.S. graduates. The indirect to direct teaching ratios were below those reported for graduates teaching in the upper elementary and high school grades.

TABLE 3

COMPARISON OF MEAN RATIOS FROM INTERACTION ANALYSIS

Ratio	B.S. (N=47)		M.A. (N=16)	
	$\bar{X}$	SD	$\bar{X}$	SD
i/d	0.50	0.29	0.52	0.25
I/D	0.52	0.24	0.55	0.20
ST/TT	0.49	0.20	0.52	0.21
Lec/TT	0.35	0.23	0.32	0.14
Sil/TT	0.35	0.17	0.31	0.16

The Classroom Observation Record consists of 18 dimensions of teacher behavior and four dimensions of student behavior. This instrument was completed at the end of each observation session. Based on previous work of the author (Ayers, 1977) the results of the use of the instrument have been factor analyzed. It appeared that three factors were present and

have been termed I, Cognitive Style; II, Affective Style; and III, Student Behavior. Table 4 shows the factor scores for the two groups of graduates. Again, it will be noted that the M.A. graduates achieved higher scores.

TABLE 4

COMPARISON OF MEAN SCORES FROM THREE FACTORS OF THE COR

FACTOR	B.S. (N=84)		M.A. (N=23)	
	$\bar{X}$	SD	$\bar{X}$	SD
I	40.0	8.0	43.6	3.5
II	61.5	5.1	66.7	7.2
III	21.7	5.1	23.9	2.8

The Tuckman Teacher Feedback Form is completed at the end of each observation session. The results of the use of this instrument are shown in Table 5. Again, it will be noted that M.A. graduates were consistently rated higher in their performance in the classroom.

TABLE 5

COMPARISON OF MEAN SCORES FROM THE TUCKMAN TEACHER FEEDBACK FORM

FACTOR	B.S. (N=31)		M.A. (N=13)	
	$\bar{X}$	SD	$\bar{X}$	SD
Creativity	29.2	6.7	31.2	5.8
Dynamism	29.3	6.4	31.8	4.9
Organized Demeanor	34.3	5.1	36.0	4.0
Warmth and Acceptance	35.7	6.4	37.6	5.1

Correlations of the variables for the B.S. graduates are shown in Table 6. In general, intercorrelations between the variables of an instrument were high and positive, as would be expected. Significant correlations of interest include negative correlations and scores from the Tuckman Teacher Feedback Form. Several positive significant correlations were noted between other variables, but no explanation can be offered for the results.

Use of Evaluation Results

Program development at Tennessee Technological University is an ongoing process within the teacher education programs. Program development, operation and evaluation can best be described as a cyclic process that is continuous. The use of evaluation results is the key element in examining the total process for curriculum development and improvement.

Evaluation reports of the application of the model have been disseminated to all faculty in teacher education, University administrators and other interested individuals. Meetings have been held for the purpose of discussing the results of the studies, and a special curriculum study committee has been formed from the faculty within the teacher education programs of the University. This group has been charged with the responsibility of examining the results of the studies in depth and on a continuing basis. Following is a listing of some of the more important changes and curricula improvements at the bachelor's level in early childhood education that are directly attributable to the implementation of the evaluation model.

1. Addition of more practicum and laboratory experiences into the teacher education program. Included under this broad area are more contacts in working with children in the schools at an earlier level.
2. Courses in the history, philosophy, and social foundations of education were modified.
3. Overlap and duplication among courses has been eliminated.

TABLE 6

CORRELATIONAL DATA FOR B.S. SUBJECTS (N=65)*

Scores	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1. NTE Commons	1000	476	-046	-049	-019	007	-355	139	158	116	129	143	012	012	012	187	107	173	221	177	097	350	128	286
2. Gr. Pt. Av.		1000	228	234	-224	245	-176	075	053	064	058	045	004	004	004	-020	-037	-066	019	-054	392	302	337	352
3. Prin. I			1000	587	499	623	-271	012	056	032	-010	-012	083	083	083	-145	107	-112	-092	- 92	240	-062	125	113
4. Prin. II				1000	354	722	-083	-042	-011	005	-037	-019	147	147	147	108	071	-017	-225	063	202	-094	-034	-118
5. Prin. III					1000	500	-288	-043	-023	-018	-029	-026	031	031	031	241	021	106	-066	127	185	-146	007	-089
6. Prin. IV						1000	-209	006	021	026	012	001	044	044	044	255	-003	072	070	151	019	-230	-208	-220
7. F-Scale							1000	097	097	127	117	131	-064	-064	-064	060	116	015	-109	033	-287	-491	-224	-320
8. i/d								1000	910	906	904	922	125	142	023	-052	-042	-219	065	-059	113	309	195	119
9. I/D									1000	927	919	942	151	166	048	-026	-042	-035	026	001	067	246	128	110
10. ST/TT										1000	966	981	045	034	-062	-036	-028	-015	007	-021	045	187	101	041
11. Sil/TT											1000	986	-015	003	-104	-008	-034	011	067	-011	053	192	082	046
12. Lec/TT												1000	040	043	-087	-021	-017	-006	069	-010	037	184	086	036
13. COR-I													1000	980	985	-375	-250	-430	-442	-489	726	515	754	762
14. COR-II														1000	975	-375	-250	-430	-442	-489	744	610	744	806
15. COR-III															1000	-373	-249	-430	-441	-486	560	370	505	733
16. SET-1																1000	252	787	146	664	000	-136	-200	-117
17. SET-2																	1000	290	094	393	047	141	056	097
18. SET 3																		1000	288	756	-080	-177	-212	-093
19. SET-4																			1000	192	-021	304	199	026
20. SET-5																				1000	021	037	-079	-002
21. TUCK-I																					1000	618	802	850
22. TUCK-II																						1000	614	671
23. TUCK-III																							1000	776
24. TUCK-IV																								1000

*Decimal points omitted. Underlined values significant at or beyond .05 level.

4. Additional courses were created to meet special needs of various groups, i.e., science methods and reading courses.

5. Reconceptualization of the teacher's role is taking place on a continuing basis.

6. Modifications in the requirements for a major in elementary education have taken place and the total program has been made more field oriented.

7. A course has been developed in the area of special education that is now required for all students prior to graduation.

8. Methods instructors have become more active in the public schools through actually assuming the role of the classroom teacher.

9. Efforts have been made to provide greater assistance to graduates in locating employment and in providing assistance after entry into the profession.

10. Additional human relations training has been introduced into the curriculum.

Conclusions and Summary

The purpose of this paper was to present a summary description of an evaluation model that appears to be an effective tool to gather data for the improvement of teachers in early childhood education. No attempt was made to draw elaborate conclusions from the study since there are many other factors that must be considered. It is obvious, however, that individuals who have achieved the M.A. degree (or who are more experienced teachers) appeared to be better teachers in the classroom.

Evaluation is an integral part of the teacher education programs of Tennessee Technological University. A systematic plan has been developed and implemented for collecting information, performing necessary analyses, and dissemination of results. In turn, the evaluation efforts have been used in the cyclic process for program modification, improvement and development. Systematic evaluation is essential to the total process for the training of teachers and should be an integral part of every such

process. However, change is a slow process and means need to be developed to expedite the process.

The model outlined in this paper can be used by schools and other agencies for the improvement of teachers. The main element to be kept in mind in the implementation of such a process is consistency of the plan of action and appropriate use of the use of the evaluation.

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